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Approaching Participatory Design in “Citizen Science”

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This paper explores the use of participatory design methods in engaging older people in Citizen Science. Based on a pilot in a small Scottish town it looks at the application of designerly practices to bringing lay knowledge into professional practices around biological recording. Charting our journey, our initial focus on enabling people to collect biological data, with a focus on participatory methods and design thinking, and its evolution into work about what collecting biological participants enabled for participants. It captures reflections on well-being, mobility, changing environments and communities, and a growing confidence in themselves as experts in their own lives. The paper closes with some personal reflections on what we learnt as facilitators about the use of participatory methods. In particular the role of our own (and participants) tacit assumptions in framing approaches, and the need to open and flexible, to frame and reframe as process and outcomes shift.

(149words)

Keywords: Participatory Design, Citizen Science, Openness

INTRODUCTION

This short paper concerns a joint project between the OU in Scotland (OUiS) and the Trust for Conservation Volunteers Scotland (TCVS, a conservation charity). It looks at the use participatory design in a citizen science pilot with older residents of a semi-rural small town in central Scotland. It explores the evolution of the pilot from a study on methods to engage older people as an untapped set of data gatherers within the biological sciences to a broader focus on the outcomes for older people using these methods and a broader exploration of their lived experiences.

BACKGROUND AND CONTEXT

Our interest in participatory approaches had developed through our engagement with partners in the third sector, and we found participatory methods (Sanders and Stapper 2008; 2014) structured within a design framework an effective way to empower communities and individuals to bring new voices into academia (Macintyre 2014a). A critical component of this is the idea of learning for and through doing (Kemmis 2010). Learning through a series of structured inquiries is now part of the education landscape, underpinning “Citizen Science” (Scanlon 2012), where engaging people to collect data, creates benefits for those collecting the data as well as those in need of data. Indeed, one might argue the benefits for those collecting data while less concrete and falling under the banner of “Well Being” may be more important, as Citizen Science data is often ignored by professional bodies. It was these ambiguities that brought TCVS and OUiS together.

AIMS & Objectives

Older people have been neglected within discourses around Citizen Science. We wanted to explore how participatory design methods might be employed to develop ways of working suited to older people. While the initial conversations between partners was about exploring how we might realise the benefits data collection from this time rich group, it became clear these methods might tease out how to realise the benefits of these activities for the participants themselves. The objectives were as much about the process of engaging people in conversations about Citizen Science as any tangible methods for collecting data.

METHODS & APPROACH

Through TCVS network we developed a relationship with a day centre for older people located in a semi-rural small town with reasonable access to green areas. We started with a “town hall” style (40 participants) meeting where we introduced ourselves, the idea of collecting data and its benefits and our approach. Our approach to the community group leaned heavily on ideas around design thinking (Brown and Martin 2015) and participatory methods (Gregory 2003; Bjongvinsson *et.al* 2012). We emphasised that the role of the OUiS and TCVS was to enable and support volunteers to design and test solutions to Citizen Science that worked for them. In a sense we wanted to draw on and build their social capital (Bourdieu 1986; 2005) by placing lay voices within professional discourses (Fenge *et.al* 2011). We started working with a core group of 6 participants, though group size varied between 6 and 8 with floating members attending regularly. Each visit lasted about 2 hours. We met 12 times over a year.

WHAT WE FOUND

In this section we try to be open and honest about the process, surfacing our learning journey as well as being clear about what worked and what did not.

Small Steps

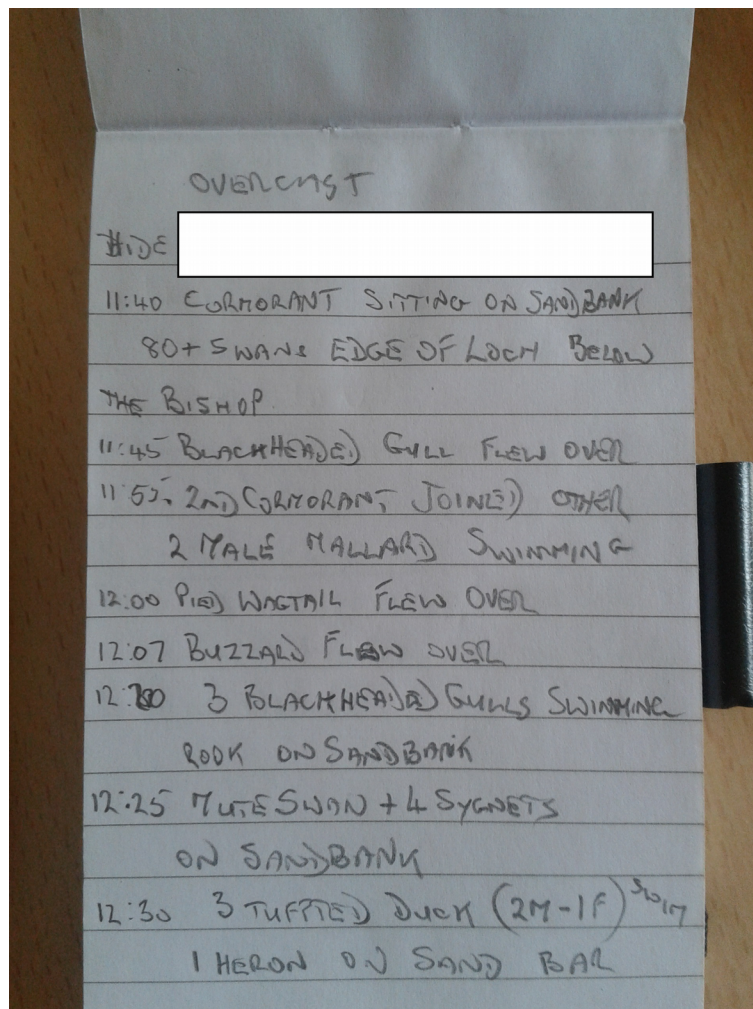
The idea of a design led approach was not familiar to participants, the language of “users”, “prototypes” was too formal and technical, with too much focus on “designerly ways of knowing” (Dorst 2011). As our relationship with participants developed, talk about design became hidden, embedded in the process. We became confident and comfortable enough to stop talking and let things unfold. Later, reflecting on those early stages, participants acknowledged the language was only part of the problem. They were also unfamiliar with the form of engagement, they were more familiar with adapting to what was being offered, sometimes consulted, not designing. Our previous work had been with younger people who seemed to accept the role of designer readily (Macintyre 2014b). We are not trying to make a broad inter-generational point here about differences in capital (Bourdieu 1986), these participants lacked a sense of themselves as designers.

Mapping & Context

At the second meeting we asked people to draw a map of their world, the places they went, and try to think about the wildlife they had or might encounter. One of our assumptions was that people might not recognise that they encountered wildlife on a daily basis. Some were interested in wildlife already, this ranged from photography, to bird watching, and for one participant with visual impairments listening to bird calls. Their maps were the most extensive, as they also included the places they went to engage in those activities. Other people's maps were restricted, and people began to reflect on mobility concerns, in particular being too far from home.

Many had been interested in wildlife when younger but became disengaged, either when they "moved away" from the countryside, but more often through "getting older". Mobility was a concern, so we asked people to "tell us what you see" in your everyday life, to draw these over their personal maps recording the locations and the species they encounter. The day centre co-ordinator was keen to organise special trips. However, mindful of sustainability, and mobility concerns we framed the possible solutions in relation to everyday practices. For the more mobile the network of paths within town and a local loch were everyday, for others it was their back garden. However, over the course of the pilot most did make "special trips" and got more confident about ranging further from familiar routes.

Figure 1: A Trip to a Local Wildlife Hide



Building Prototypes

When we started to explore how data might be collected participants wanted to record data immediately, many expressed concern about their failing memory and an inability to recall important details if they had to wait till they got home. Standard biological recording sheets were not seen as solution, as a series of A4 sheets lacked structural integrity, would likely be left at home. Our frame became, was it mobile, compact enough to be carried. We brought in some tablets and mobile phones, demonstrating approaches that might be useful. Participants felt, while they might cope, as they were a prototyping for “people like them” digital tools might exclude older

people without the access, opportunity or knowledge required to utilise them. Participants chose a notebook and pencil (see Figure 2).

Figure 2: A “Police” Notebook



Having decided on a form factor we then looked at function, participants were keen to collect useful data, and felt a standardised format was useful. Using the standard biological recording sheets as a template they developed a simplified proforma inserted in the cover page of each notebook. While the usefulness of the data was not the principal focus participants also talked through how it scaled up. They began to set out a telephone system where people were able to leave messages about their data. Interesting despite the initial rejection of technical solutions they soon became part of people's own solutions, a keen photographer began to insert digital prints into his notebook. In later visits along with the police notebooks people started to bring along recently purchased

tablets with the OU Citizen Science app iSpot (<http://www.ispotnature.org/communities/uk-and-ireland>).

Figure 3: A Garden Visitor: Images Start to Appear



Beyond Prototypes

The prototype arrived quite quickly. However, we maintained our engagement with the group and our focus shifted from the design, to what it enabled. These discussions touched on a diverse areas. Often about what it means to get older, to become less mobile, the frustration that many of the places they wanted to get to collect data meant reliance on infrequent public transport, uneven

paths and worries about getting cold or wet. They were pushing themselves to do new things, go new places to collect new records, the notebook was changing their behaviour, encouraging them to go outdoors more often. Participants noted an increase in confidence to explore and health benefits in particular weight loss, which they attributed to being more mobile.

For some it seemed to rekindle dormant interests, those that had grown up in the country started to talk about their memories of nature, and this led to reflections on the changing role of nature in society, people being less connected, and also reflections on changes in the natural world; changes in farming practice over their lives, uncertainties about climate and what appeared to be more frequent dramatic weather events, earlier seasonal events, and the blurring of the seasons. They also spoke about developing new interests, most of the group had an interest in birds, but some developed an interest in plants and others insects, purchasing guides that allowed them to identify them and build their knowledge. This interest in plants and insects was often strongly linked to changing seasonal patterns and more general environmental observations.

One of the things we asked participants to do was test their prototypes with friends and try to grow their group through handing out prototypes. There was some success, but nothing significant, the group of 8 semi-regular attendees remained. Members began to reflect on community participation, citing examples of local clubs which had closed, the inability to develop or maintain an interests. They compared this to neighbouring towns of similar size, and noted they now travelled to these towns to attend clubs and events that used to take place locally. Participants returned to these questions again and again, and while numerous causes were cited, less settled population, too settled, too close to other towns, too many older residents, not enough older people with similar interests, it seemed odd that what appears a solitary and largely self directed activity like counting wildlife numbers led to reflections on the nature of community and their place within it.

DISCUSSION & CONCLUSIONS

The focus on everyday places, on what might appear banal locations and species provides a useful starting point, building confidence and as they so start to look beyond the everyday.

Prototypes, and “testing” of their affordances became less important, what became vital was the way the notebooks encouraged – engagement with the outdoors. The design process and the focus on using participatory methods to solve problems provides a structure to what might otherwise have been a meandering process. Not just for us as facilitators but crucially for the participants for which the design process provided structure, a set of tools, a topic and reason to make changes in their lives. In making those changes they confronted issues, from questions about mobility, to health, and even reflections on community.

If the intention had been to draw on peoples social capital to design inclusive approaches (Gedajilovic *et.al* 2013) the outcome was different. The focus of our relationship shifted from the design element to the participatory component. Our work shifted to listening to participants tells us about how they used these notebooks, to what they enabled. Data collection, and thoughts of capturing the knowledge faded and the focus became the practice of going out and collecting data. We certainly make no grand claims for the work we have done, what started on the fashionable end of learning and the use of design thinking seemed to have ended up as “old fashioned” community learning.

We started of with a set of tacit assumptions about older peoples lives and outcomes, assumptions that were challenged. Own own journey seems to illustrates the role of our social capital and tacit understanding in framing solutions within the design process (Corbett 2005). These frames are a key designerly tools. However, as much as they condition the exploration of problems and the ability to exploit solutions (Holcomb *et.al* 2009) in successful designs, they can also lead to things not working (Kahneman 2011). Participatory approaches allow us to make them visible, to explore the way we frame and reframe our approach (Dorst and Cross 2001) within our learning journey. What we have learnt is not to ignore assumptions, or try and erase them, but to be open about them and their role in shaping process and outcomes.

Word Count: 1983

REFERENCES

- Bjorngvinsson E. Ehn P. Hilgren P. (2012). Design Things and Design Thinking: Contemporary Participatory Design Challenges, *Design Issues*, 29(3), 101-116
- Bourdieu, P. (1986) *The forms of capital*. In J. Richardson (Ed.) Handbook of Theory and Research for the Sociology of Education New York, Greenwood, 241-258
- (2005) *Distinction: A Social Critique of the Judgement of Taste*, London Routledge
- Brown T. Martin R. (2015). Design for Action: How to use design thinking to make great things actually happen. *Harvard Business Review*, September 2015, 56-64
- Corbett, A.C. (2005). Experiential Learning Within the Process of Opportunity Identification and Exploitation. *Entrepreneurship Theory and Practice*, 29(4), 473–491.
- Dorst, K. (2011). The core of “design thinking” and its application. *Design Studies*, 32(6), 521–532.
- Dorst, K. & Cross, N. (2001). Creativity in the design process: co-evolution of problem–solution. *Design Studies*, 22(5), 425–437.
- Fenge, L.-A., Fannin, A. Hicks, C. (2011). Co-production in scholarly activity: Valuing the social capital of lay people and volunteers. *Journal of Social Work*, 12(5), 545–559.
- Gedajlovic, E. Honing D. Moore C. B. Payne G. T. Wright M. (2013). Social Capital and Entrepreneurship: A Schema and Research Agenda. *Entrepreneurship Theory and Practice*, 37(3), 455–478.

Gergory J. (2003) Scandanvian Approaches to Participatory Design, *International Journal of Engineeering Education*, 19, (1), 62-74

Kahneman D. (2011) *Thinking, Fast and Slow*, London, Penguin

Kemmis, S. (2010). Research for praxis: Knowing doing. *Pedagogy, Culture and Society*, 18, (1), 9-27.

Holcomb, T.R. Ireland R. D., Holmes R. M., Hitt M. A. (2009). Architecture of Entrepreneurial Learning: Exploring the Link Among Heuristics, Knowledge, and Action. *Entrepreneurship Theory and Practice*, 33(1), 167–192.

Macintyre R. (2014a) Open Design and Social Inclusion in Practice. In *Designing Learning Landscapes: Mobile, Open, Inclusive*, 30th of May, Goldsmiths University of London

-(2014b). Uncertainty, Learning Design, and Inter disciplinarity: Systems and Design Thinking in the School Classroom. In: *Designs for Learning 4th International Conference*, 6th -9th of May 2014, The University of Stockholm, Sweden. <http://oro.open.ac.uk/id/eprint/40482> [accessed 3rd of July 2014].

Sanders, E.B.-N. & Stappers, P.J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18.

Sanders, E.B.-N. & Stappers, P.J.(2014). Probes, toolkits and prototypes: three approaches to making in codesigning. *CoDesign*, 10(1), 5–14.

Scanlon E. (2012) Open educational resources in support of science learning: tools for inquiry and observation, *Distance Education*, 33, (2), 221-236